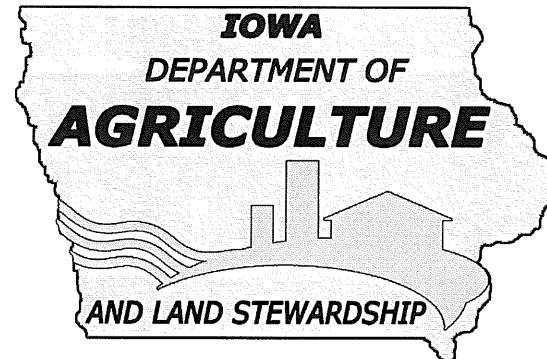


Iowa Department of Agriculture & Land Stewardship
BILL NORTHEY, Secretary of Agriculture

STATE CLIMATOLOGIST OFFICE

IOWA CLIMATE REVIEW

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The cooperation of the National Weather Service offices at Davenport, Johnston (Des Moines), La Crosse, Sioux Falls and Valley (Omaha) and their network of volunteer weather observers across Iowa in providing the data used in compiling this report is gratefully acknowledged.

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The climatic data used in this report are compiled from official records on file at the State Climatologist Office in Des Moines. Some of these data are of a preliminary nature and are subject to change without notice. Differences may exist in data values published here and those subsequently published in the U.S. Department of Commerce report *Climatological Data Iowa* due to use of differing quality control procedures.

IOWA MONTHLY WEATHER SUMMARY – FEBRUARY 2017

General Summary. Temperatures averaged 33.8° or 9.8° above normal while precipitation averaged 1.01 inches or just 0.04 inches less than normal. This ranks as the 3rd warmest and 72nd wettest February among 145 years of records. Only 1954 and 1998 brought a warmer February than this year.

Temperatures. Temperatures averaged near seasonal norms for the first nine days of the month. However, warmer than normal weather prevailed for all but one (25th) of the remaining days of February with an exceptionally mild period from the 16th through the 22nd when temperatures averaged 23.7° above normal. A look at the Iowa record books back to 1891 found 62 February dates when temperatures reached 70 degrees or higher somewhere in the state. Prior to this year no single February brought more than four days of 70 degree weather (1930, 1981 and 1996) with the longest streak of 70° weather being three consecutive days in 1996 (24th-25th-26th). However, this February brought eight days of 70° weather with seven of those coming consecutively from the 16th through the 22nd with one more on the last day of the month. Ottumwa recorded the highest temperature of the month with a 79° reading on the 22nd. This reading has been exceeded only three times previously in February in Iowa (82° at Sidney on 2/29/1972 and 80° at Clarinda and Mount Ayr on 2/24/1930). Daily record high temperatures were recorded somewhere in the state every day from the 16th through the 22nd, primarily across the southeast one-half of the state, with Ottumwa setting or tying daily records on each of these seven days. On the other extreme Little Sioux recorded the only subzero temperature of the month with a -3° reading on the morning of the 9th.

Heating Degree Day Totals. Home heating requirement, as estimated by heating degree day totals, averaged 25% less than normal and 19% less than last February. Heating degree day totals thus far this winter season are running 17% less than normal and 5% less than last season through the end of February. A warmer heating season was last recorded in the winter of 2001-2002.

Precipitation. There were only two measureable snow events during the month. The first one on the 8th brought snow to about the southern two-thirds of the state with greatest amounts falling across west central and south central Iowa where Indianola picked up 6.1 inches. The second, and much more intense event, brought snow to all of the state on the 23th-24th. Heaviest snow

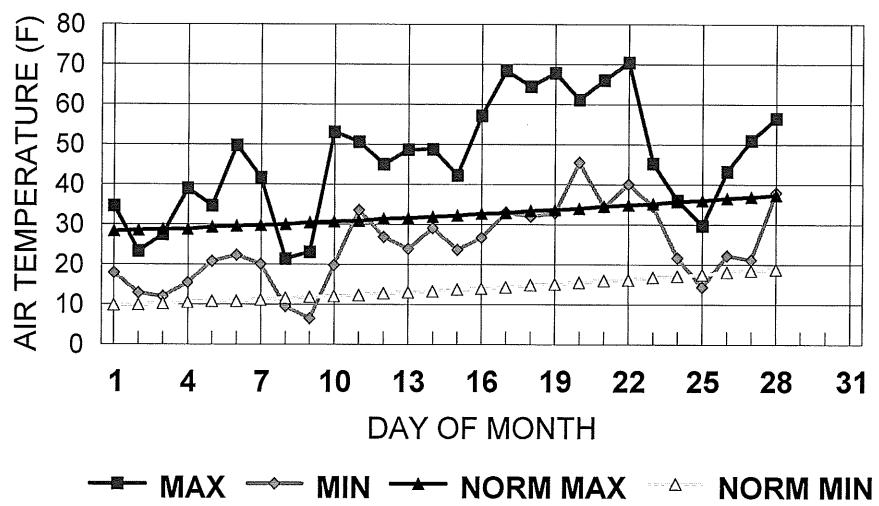
fell across the northwest where 12.5 inches fell near West Bend and 12.0 inches at Algona. An inch or less of snow fell across east central Iowa and the southern one-quarter of the state. Wind gusts up to 48 mph brought blizzard conditions across about the northwest one-third of the state with this late month storm. Monthly snow totals varied from only 0.3 inches at Manchester to 13.6 inches at Little Sioux. A statewide average of 4.5 inches of snow fell during the month, 2.3 inches less than normal and the lowest February total since 2009. This ranks as the 43rd lowest February snow total among 130 years of records. There were also several rain events during the month with the largest coming on the 20th when rain fell statewide with totals of an inch or more falling over parts of north central and northeast Iowa. Monthly precipitation totals varied from only 0.20 inches at Allerton where this was the driest February since 1970 to 2.78 inches at Nashua or more than 2.5 times their normal amount for February.

Severe Weather. Thunderstorms developed across eastern Iowa during the late afternoon of the 28th and brought one brief tornado in Clinton County and large hail reports from eleven east central and southeast Iowa counties. Only two other February tornadoes have been recorded in Iowa (Feb. 1, 1922 at Monticello and Feb. 23, 1977 at Mason City). Thunderstorms were also fairly widespread on the 6th-7th, 20th and 23rd-24th but with only a few very isolated large hail occurrences on the 7th and 20th.

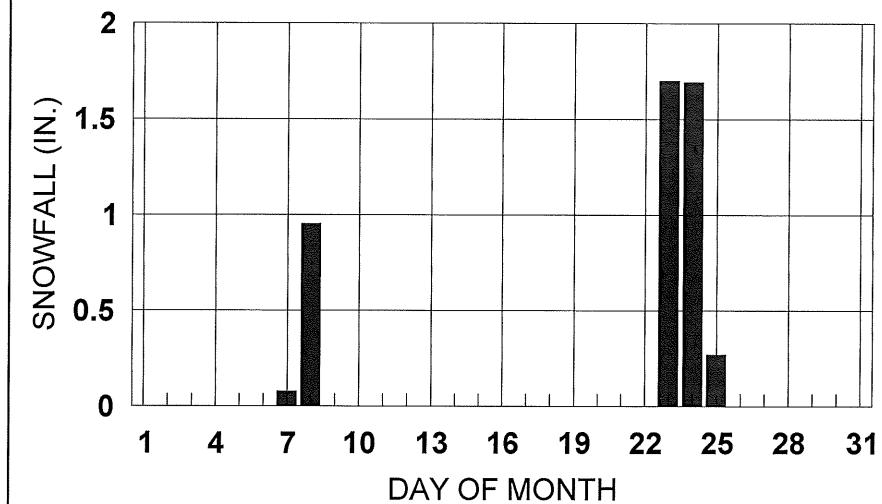
Winter Summary. Temperatures over the three mid-winters months averaged 26.8° or 4.7° above normal while precipitation totaled 4.17 inches or 0.83 inches above normal. This ranks as the 9th warmest and 31st wettest winter among 144 years of records. Six of the top ten warmest winters have come within the past 20 years.

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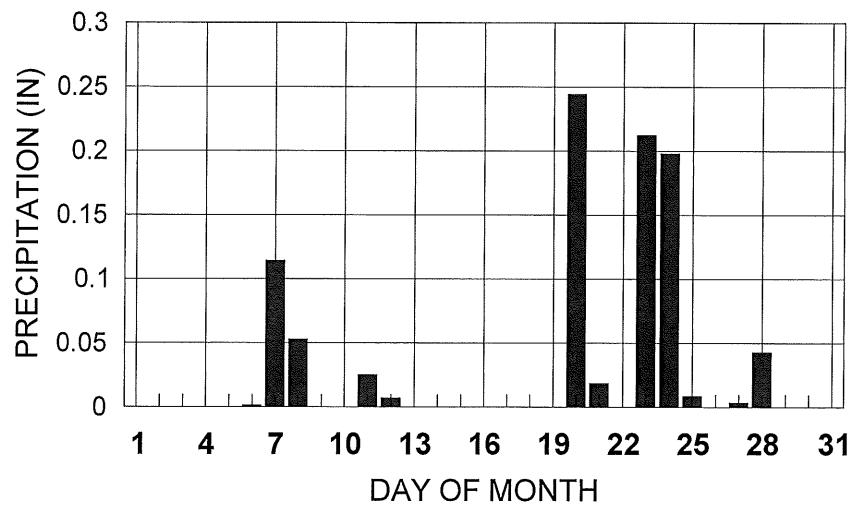
IOWA DAILY MAX & MIN TEMPERATURES FEBRUARY 2017 (SELECTED STATIONS)



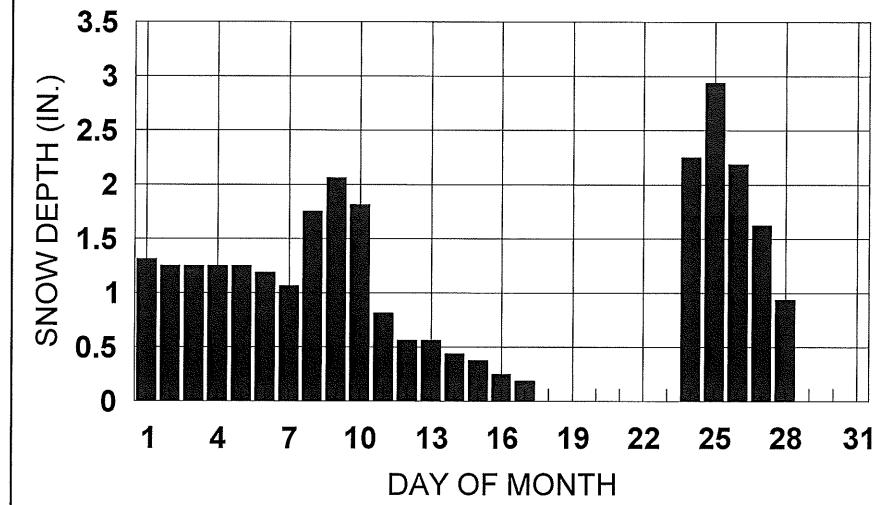
IOWA AVERAGE DAILY SNOWFALL FEBRUARY 2017 (SELECTED STATIONS)



IOWA AVERAGE DAILY PRECIPITATION FEBRUARY 2017 (SELECTED STATIONS)



IOWA AVERAGE DAILY 6 am SNOW DEPTH FEBRUARY 2017 (SELECTED STATIONS)



FEBRUARY 2017	OBS	STATION	TIME	DAILY NEW SNOWFALL FOR THE 24 HOURS ENDING AT THE OBSERVATION TIME (OB\$ TIME) AND TOTAL DEPTH OF SNOW ON GROUND (INCHES)																				IOWA CLIMATE REVIEW											
				TOTAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
NORTHWEST DIVISION																																			
Akron	7	SNOWFALL	7.1	SNOW ON GROUND	7	6	5	4	3	1	1	1	1	I															7.0	I	7	7	7	6	3
Cherokee	8	SNOWFALL	8.2	SNOW ON GROUND	5	5	5	4	4	4	2	2	2	T	T	T	T	T	T	T	T	T	T				7.0	1.0	7	7	7	6	4		
Emmetsburg	8	SNOWFALL	10.0	SNOW ON GROUND	7	7	6	5	5	4	4	4	4	3	2	1	1	I										8.8	1.2	9	10	9	8	7	
Estherville 4 E	7	SNOWFALL	M	I	I	SNOW ON GROUND	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M		
Everly 3 WNW	7	SNOWFALL	9.0	SNOW ON GROUND	5	4	4	4	4	4	3	3	3	3	3	2	1	1	I								7.0	2.0	7	9	8	7	5		
Hawarden	7	SNOWFALL	4.7	SNOW ON GROUND	6	6	6	5	4	3	2	2	2	2	1	1												4.5	I	5	4	3	3	2	
Le Mars	7	SNOWFALL	7.9	SNOW ON GROUND	M	M	M	M	M	M	M	1	1	I														7.2	0.2	I	6	5	3	1	
Orange City	7	SNOWFALL	4.5	SNOW ON GROUND	4	4	4	4	3	3	3	2	2	2	1	T	T	T	T	T	T	T	T	T	T	T	T	4.2	0.2	4	4	3	2	2	
Pocahontas	8	SNOWFALL	12.5	SNOW ON GROUND	4	4	3	2	2	2	T	T	T	T														10.0	2.0	10	12	10	8	6	
Primghar	16	SNOWFALL	7.1	SNOW ON GROUND	2	2	2	2	2	2	1	1	1	1	I													I	7.1	7	5	4	2	1	
Remsen #2	6	SNOWFALL	7.2	SNOW ON GROUND	4	4	4	4	4	4	2	2	2	2	1													6.7	0.4	7	7	6	5	2	
Rock Rapids	8	SNOWFALL	5.0	SNOW ON GROUND	4	4	4	4	4	4	3	2	2	2	I													5.0	I	5	5	4	3	1	
Rock Valley	7	SNOWFALL	4.5	SNOW ON GROUND	2	2	2	2	2	2	2	2	2	2	I													4.5	I	5	4	3	2	2	
Sanborn	8	SNOWFALL	7.8	SNOW ON GROUND	4	4	4	4	3	3	2	2	2	2	1	1	1	1	I								7.2	0.6	I	8	7	6	4		
Sheldon	7	SNOWFALL	5.7	SNOW ON GROUND	6	5	4	3	3	3	3	2	2	1	1	T	T	T	T	T	T	T	T	T	T	T	5.5	0.2	5	4	4	3	1		
Sibley	7	SNOWFALL	5.0	SNOW ON GROUND	3	3	3	3	2	2	1	1	1	1	I													5.0	I	5	4	4	3	1	
Sioux Center 2 SE	16	SNOWFALL	7.0	SNOW ON GROUND	3	3	3	2	2	1	1	1	1	1	T	T	T	T	T	T	T	T	T	T	T	T	T	T	7.0	7	6	4	3	2	
Sioux Rapids 4 E	22	SNOWFALL	8.7	SNOW ON GROUND	3	3	3	2	2	1	1	1	1	T	T	T	T	T	T	T	T	T	T	T	T	T	3.1	5.2	3	7	7	5	3	3	
Spencer 1 N	24	SNOWFALL	11.0	SNOW ON GROUND	2	2	2	2	2	2	2	2	2	2	1	T	T	T									5.5	5.5	5	11	9	8	5	2	

FEBRUARY 2017		STATION INDEX			IOWA CLIMATE REVIEW			FEBRUARY 2017		STATION INDEX			IOWA CLIMATE REVIEW		
STATION NAME	DIV	COUNTY	COORDINATES			(FT)	STATION NAME	DIV	COUNTY	COORDINATES			(FT)		
			DEG	MIN	SEC					DEG	MIN	SEC			
Keosauqua	SE	Van Buren	40	43	39	91 58 6	592	Postville	NE	Allamakee	43	5	24	91 33 29	1165
Knoxville	SC	Marion	41	19	29	93 6 3	915	Primghar	NW	O' Brien	43	5	11	95 37 45	1520
Lake Mills	NC	Winnebago	43	25	4	93 32 5	1260	Randolph	SW	Fremont	40	52	28	95 34 0	980
Lamoni	SC	Decatur	40	37	24	93 57 3	1128	Rathbun Dam	SC	Appanoose	40	49	30	92 53 33	965
Lamoni Airport	SC	Decatur	40	37	50	93 54 3	1135	Red Oak	SW	Montgomery	41	0	13	95 14 31	1040
Le Claire L & D 14	EC	Scott	41	34	29	90 24 2	577	Remsen #2	NW	Plymouth	42	48	37	95 58 30	1330
Le Mars	NW	Plymouth	42	46	54	96 8 45	1320	Rock Rapids	NW	Lyon	43	25	48	96 10 7	1347
Little Sioux 2 NW	WC	Harrison	41	49	35	96 3 2	1025	Rock Valley	NW	Sioux	43	12	16	96 18 22	1246
Logan	WC	Harrison	41	38	17	95 47 18	1030	Rockwell City	WC	Calhoun	42	23	49	94 37 45	1224
Lorimor	SC	Union	41	7	29	94 3 5	1230	Sac City	WC	Sac	42	25	10	94 58 34	1210
Lowden	EC	Cedar	41	51	23	90 55 48	715	Saint Ansgar	NC	Mitchell	43	22	54	92 55 24	1139
Manchester #2	NE	Delaware	42	28	24	91 27 6	990	Salem 1 S	SE	Henry	40	50	8	91 37 20	650
Mapleton #2	WC	Monona	42	9	43	95 47 1	1200	Sanborn	NW	O' Brien	43	10	45	95 39 37	1551
Maquoketa 4 W	EC	Jackson	42	2	58	90 44 56	782	Sheldon	NW	O' Brien	43	10	51	95 51 10	1420
Marshalltown	C	Marshall	42	3	53	92 55 28	871	Shenandoah	SW	Page	40	46	2	95 22 48	975
Marshalltown Airport	C	Marshall	42	6	38	92 54 58	974	Sibley	NW	Osceola	43	24	17	95 44 54	1529
Mason City	NC	Cerro Gordo	43	9	47	93 11 43	1105	Sidney 1 SSE	SW	Fremont	40	44	10	95 38 35	1140
Mason City Airport	NC	Cerro Gordo	43	9	16	93 19 37	1225	Sigourney	SE	Keokuk	41	20	11	92 12 16	800
Massena	SW	Cass	41	15	19	94 45 54	1325	Sioux Center 2 SE	NW	Sioux	43	3	21	96 9 9	1360
Moline Airport		Rock Island, IL	41	27	55	90 31 24	592	Sioux City Airport	WC	Woodbury	42	23	29	96 22 45	1095
Montezuma 1 W	C	Poweshiek	41	35	1	92 32 59	965	Sioux Falls		Minnehaha, SD	43	34	40	96 45 14	1428
Monticello	EC	Jones	42	14	28	91 10 24	820	Sioux Rapids 4 E	NW	Buena Vista	42	53	35	95 3 55	1420
Mount Ayr	SC	Ringgold	40	42	19	94 14 34	1180	Spener Airport	NW	Clay	43	9	52	95 12 6	1338
Mount Pleasant 1 SSW	SE	Henry	40	56	55	91 33 53	730	Spencer 1 N	NW	Clay	43	9	55	95 8 48	1326
Muscatine	EC	Muscatine	41	24	27	91 4 22	549	Spirit Lake 4 W	NW	Dickinson	43	25	53	95 10 56	1430
Muscatine 2 N	EC	Muscatine	41	28	17	91 3 47	680	Stanley 3 WSW	NE	Buchanan	42	38	0	91 51 48	1114
Nashua 2 SW	NC	Floyd	42	56	13	92 34 13	1059	Storm Lake	NW	Buena Vista	42	38	49	95 11 36	1442
New Hampton	NE	Chickasaw	43	2	43	92 18 44	1148	Strawberry Point	NE	Clayton	42	41	7	91 31 57	1200
Newton	C	Jasper	41	42	42	93 1 47	960	Swea City 4 W	NC	Kossuth	43	24	8	94 22 59	1239
Northwood	NC	Worth	43	26	19	93 13 31	1190	Swisher	EC	Johnson	41	50	59	91 40 35	790
Oakland	SW	Pottawattamie	41	18	16	95 23 4	1260	Toledo 3 N	C	Tama	42	2	8	92 34 50	949
Oelwein 1 E	NE	Fayette	42	40	48	91 52 30	1165	Tripoli	NE	Bremer	42	48	45	92 15 27	960
Omaha Eppley Airport		Douglas, NE	41	18	37	95 53 57	982	Underwood	SW	Pottawattamie	41	23	22	95 40 52	1080
Orange City	NW	Sioux	43	0	2	96 3 14	1380	Vinton	EC	Benton	42	10	13	92 0 28	850
Osage	NC	Mitchell	43	16	46	92 48 38	1170	Wapello	SE	Louisa					
Osceola	SC	Clarke	41	1	10	93 45 1	1028	Washington	SE	Washington	41	16	57	91 42 28	687
Oskaloosa	SE	Mahaska	41	19	17	92 38 48	830	Waterloo Airport	NE	Black Hawk	42	33	16	92 24 4	868
Ottumwa Airport	SE	Wapello	41	6	28	92 26 48	842	Webster City	C	Hamilton	42	28	7	93 47 50	1170
Pella 1 S	SC	Marion	41	22	34	92 55 13	780	Williamsburg 1 E	EC	Iowa	41	39	54	91 59 52	810
Perry	C	Dallas	41	50	22	94 6 38	965	Winterset 1 S	SC	Madison	41	18	22	94 1 6	1104
Pocahontas	NW	Pocahontas	42	43	45	94 39 41	1212	Zearing	C	Story	42	10	1	93 18 35	1116

REFERENCE NOTES

DEFINITIONS

STATION NAMES: Name of the city or locality. Figures and letters following the station name indicate the distance and direction from the post office or town community center.

NORMALS: The average of the meteorological element over the period from 1981 to 2010. Normals are calculated by the National Climatic Data Center and are revised once every 10 years. The precipitation and snowfall normals are strictly an average of the values recorded during the 1981-2010 period. However, temperature and degree day normals may have been adjusted to better correspond to the current (as of 2010) temperature measurement practice and thus may vary slightly from the average of the original 30-year values.

DEGREE DAYS: One heating (cooling) degree day is accumulated for each whole degree that the daily mean temperature [average of the daily maximum and minimum air temperature] is BELOW (ABOVE) 65°F. Degree days are used to provide a measure of the effect of temperature upon energy consumption for heating or cooling of homes or buildings. The greater the heating (cooling) degree day total, the greater the amount of energy needed to heat (cool) your home or building.

PRECIPITATION: Values shown in hundredths of an inch are water equivalent totals, i.e., total of liquid (rain) and melted frozen (snow, sleet, hail) precipitation. The snowfall data tables include the unmelted depth of snow and sleet in tenths of an inch. The depth of snow on the ground (SN ON GROUND) refers to the depth of all snow or ice (new or old). This 'Snow on Ground' value is the depth of snow on the ground at the time of the precipitation observation at all stations *except*: Burlington, Davenport, Des Moines, Dubuque, Mason City, Moline, Omaha, Ottumwa, Sioux City and Sioux Falls Airports where the snow depth is measured at 6 a.m. CST while the new snowfall is that for the 24 hour period ending at midnight. Daily precipitation and snowfall amounts are for the 24 hours ending at the time of observation (given in the 'OBS TIME' column). An asterisk in the daily precipitation table indicates that the rain gage was not read that day. A multi-day precipitation total is included in the amount immediately following the asterisks.

TEMPERATURE: The daily maximum (MAX) and minimum (MIN) temperatures are recorded for the 24 hours ending at the time of observation. The significance of the time of observation in interpreting these data is discussed in the preceding paragraph.

TIME OF OBSERVATION: At most locations measurements of temperature and precipitation are made only once daily at the same hour of the day. This time is referred to as the 'Time of Observation' and is given in the 'OBS TIME' column of the data tables. All observations, unless otherwise noted, are for the 24 hour period ending at the time of observation. Note that in most cases the resulting data are not for calendar day (i.e., midnight-to-midnight) periods and further that the temperature observations may be made at a different time than the precipitation observation at the same station. See the PRECIPITATION paragraph in this section for a further explanation of the significance of the time of observation. All times are expressed on a 24-hour clock (i.e., 7 a.m. = 7; 5 p.m. = 17; midnight = 24, etc.).

SYMBOLS USED IN THE DAILY AND MONTHLY DATA TABLES.

' ' Underlined data in the daily temperature, precipitation and snowfall tables indicates that the data in question has been estimated. Estimated data are provided when the original measurements are not available or are of suspect accuracy.

ITALICS. Data given in italics in the daily precipitation or snowfall tables indicate that the date on which the precipitation was reported has been changed from what was given on the original reports.

'+' A plus sign in the monthly summarized data tables indicates that the temperature or precipitation extreme given also occurred on one of more earlier dates during the month.

BLANK ENTRIES: Blank entries in the monthly summarized data table indicates that no data are available. Blank entries in the daily precipitation and snowfall data tables indicates that no precipitation was recorded. M = missing, no data recorded.

ABBREVIATIONS:

TMP DEP NOR: Temperature departure from the 1981-2010 normal.

EXT MAX: Extreme maximum temperature for the month and the day on which it was measured.

EXT MIN: Extreme minimum temperature for the month and the day on which it was measured.

MAX 90+: Number of days with maximum temperatures which were greater than or equal to 90°F.

MAX 32-: Number of days with maximum temperatures which were less than or equal to 32°F.

MIN 32-: Number of days with minimum temperatures which were less than or equal to 32°F.

MIN 0°: Number of days with minimum temperatures which were less than or equal to 0°F.

16/17 SEAS: 2016-2017 season (July 1, 2016 through the end of the published month).

NOR SEAS: Normal number of degree days through the end of the published month.

DEP NORM: Monthly precipitation total departure from 1981-2010 normal.

EXT DAY: Extreme one-day precipitation amount and the day on which it occurred.

.01+: Number of days with precipitation of 0.01 inch or greater.

.10+: Number of days with precipitation of 0.10 inch or greater.

1.00+: Number of days with precipitation of 1.00 inch or greater.

MAX ON GRD: Maximum depth of accumulated snow on the ground (inches) and the day on which it was measured.

OBS TIME: Observation Time: The time (24-hour clock) at which the daily temperature and/or precipitation measurement is made (7 = 7 a.m.; 17 = 5 p.m.; 24 = midnight).

DIV: Climate Division: NW = northwest, NC = north central, etc.

LAT: Latitude in degrees and minutes north.

LON: Longitude in degrees and minutes west.

T: Trace: < 0.005" of precipitation; < 0.05" snowfall or < 0.5" snow on ground.

